

**Amendment and Response**

Applicant: Laurent Schaller

Serial No.: 09/828,322

Filed: April 5, 2001

Docket No.: P0021814.00 / M190.319.101

Title: BRIDGE CLIP TISSUE CONNECTOR APPARATUS AND METHODS

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**IN THE CLAIMS**

Please amend claims 1, 3, 20, 24, 41, 43, and 55 as follows:

1.(Currently Amended) A tissue connector assembly comprising a surgical fastener comprising two clips, each sized and shaped to attach tissues and hold the tissues together therein, wherein at least one of said two clips is a self-closing clip adapted to self-transition from a first shape to a second shape, the first and second shapes being different;

and a bridge portion connecting said two clips and spacing said clips from one another.

2.(Previously Presented) The tissue connector assembly of claim 1, wherein said bridge portion is substantially straight.

3.(Currently Amended) The tissue connector assembly of claim 2, wherein each of said two clips ~~have~~has an open configuration and a closed configuration independent of an other of said two clips.

4.(Previously Presented) The tissue connector assembly of claim 3, wherein said bridge portion provides a predetermined spacing between said clips in said closed configuration.

5.(Previously Presented) The tissue connector assembly of claim 3, wherein each clip has a proximal end point and a distal end point and wherein the proximal end point is separated from the distal end point when said clip is in said open configuration and wherein the distance between said proximal end point and said distal end point is reduced when said clip is in said closed configuration.

6.(Previously Presented) The tissue connector assembly of claim 5, wherein said self-closing clip comprises shape memory material.

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7.(Previously Presented) The tissue connector assembly of claim 5, further comprising a coil surrounding a substantial length of said self-closing clip.

8.(Previously Presented) The tissue connector of claim 5, wherein said closed configuration is an unbiased configuration.

9.(Previously Presented) The tissue connector assembly of claim 5, wherein said closed configuration is a loop.

10.(Previously Presented) The tissue connector assembly of claim 5, wherein said open configuration is a biased configuration, and further comprising a release mechanism having a first position to bias said self-closing clip in said open configuration.

11.(Previously Presented) The tissue connector assembly of claim 10, wherein said closed configuration is an unbiased configuration, and wherein said release mechanism has a second position to unbias said self-closing clip into said closed configuration.

12.(Previously Presented) The tissue connector assembly of claim 11, further comprising a coil surrounding a substantial length of said self-closing clip, where said coil is coupled at one point on said self-closing clip and releasably coupled via said release mechanism at a second point on said self-closing clip.

13.(Previously Presented) The surgical fastener of claim 12, wherein said first position provides for compressing said coil between said first point and second point to form said biased configuration.

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14.(Previously Presented) The tissue connector assembly of claim 13, wherein said second position provides for releasably uncoupling said coil from said second point to form said unbiased configuration.

15.(Previously Presented) The tissue connector assembly of claim 5, wherein said surgical fastener has two ends including a first end and a second end, and further comprising two tissue piercing members including a first tissue piercing member releasably coupled to the first end and a second tissue piercing member releasably coupled to said second end.

16.(Previously Presented) The tissue connector assembly of claim 15, further comprising a release mechanism, and wherein said release mechanism activates said release of said two piercing members from said respective two ends.

17.(Previously Presented) The tissue connector assembly of claim 16, wherein said release mechanism activates the closing of said self-closing clip.

18.(Previously Presented) The tissue connector assembly of claim 15, further comprising two sutures, wherein said coupling of said first tissue piercing member to said first end includes one of said sutures, and wherein said coupling of said second tissue piercing member to said second end includes the other of said sutures.

19.(Previously Presented) The tissue connector assembly of claim 18, wherein said suture of said first coupling and said suture of said second coupling are between about 10 mm and about 300 mm in length.

20.(Currently Amended) A tissue connector assembly comprising:  
a surgical fastener comprising two clips sized and shaped to attach tissues and hold the tissues therein including at least one self-closing clip having an open

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configuration and a closed configuration, where ~~said open configuration is a biased configuration and~~ said closed configuration is an unbiased configuration having a loop shape and said open configuration is a biased configuration having a shape differing from a shape of said closed configuration, and a bridge portion having a substantially straight portion connecting said two clips; and

a release mechanism having a first position to bias said self-closing clip in said open configuration and a second position to unbias said self-closing clip into said closed configuration.

21.(Previously Presented) The tissue connector assembly of claim 20, further comprising a coil surrounding a substantial length of said self-closing clip, where said coil is coupled at one point on said self-closing clip and releasably coupled via said release mechanism at a second point on said self-closing clip.

22.(Previously Presented) The surgical fastener of claim 21, wherein said first position provides for compressing said coil between said first point and second point to form said biased configuration.

23.(Previously Presented) The tissue connector assembly of claim 22, wherein said second position provides for releasably uncoupling said coil from said second point to form said unbiased configuration.

24.(Currently Amended) A tissue connector assembly comprising:

a surgical fastener having two ends including a first end and a second end and including two clips sized and shaped to attach tissues including at least one self-closing clip having a loop shape terminating at said first end, and a substantially straight bridge portion connecting said two clips; and

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two tissue piercing members including a first tissue piercing member releasably coupled to the first end and a second tissue piercing member releasably coupled to said second end.

25.(Previously Presented) The tissue connector assembly of claim 24, further comprising a release mechanism, and wherein said release mechanism activates said release of said two piercing members from said respective two ends.

26.(Previously Presented) The tissue connector assembly of claim 25, wherein said release mechanism activates the closing of said self-closing clip.

27. – 30.(Cancelled)

31.(Previously Presented) Surgical clip apparatus sized and shaped to attach tissues comprising an elongated member, a pair of coils surrounding at least a portion of said elongated member, said pair of coils being serially arranged and spaced from one another along said elongated member, said elongated member being shape memory material and having an unbiased shape, which includes a plurality of loops, and a biased shape, said elongated member tending to move toward said unbiased shape from said biased shape.

32.(Previously Presented) The apparatus of claim 31 wherein said loops are spaced from one another.

33.(Previously Presented) The apparatus of claim 32 wherein each coil surrounds at least a portion of a different one of said loops.

34.(Previously Presented) The apparatus of claim 31 wherein each coil has an outer end and an inner end, said inner ends being spaced from one another.

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35.(Previously Presented) The apparatus of claim 32 wherein each coil has an outer end and an inner end, and said elongated member has two enlarged end portions, further including a restraint coupled to said elongated member adjacent to each of said inner ends.

36.(Previously Presented) Tissue connector apparatus comprising a surgical clip sized and shaped to attach tissues, first and second tissue piercing members each having first and second end portions, first and second couplings, and first and second flexible members, said surgical clip having first and second end portions, said first coupling being coupled to said first end portion of said surgical clip and said second coupling being coupled to said second end portion of said surgical clip, said first flexible member having a first end portion coupled to said first coupling and a second end portion secured to said second end portion of said first tissue piercing member, said second flexible member having a first end portion coupled to said second coupling and a second end portion secured to said second end portion of said second tissue piercing member, said surgical clip comprising an elongated member, a pair of coils surrounding at least a portion of said elongated member, said pair of coils being serially arranged and spaced from one another along said elongated member, said elongated member being shape memory material and having an unbiased shape, which includes a plurality of loops, and a biased shape, said elongated member tending to move toward said unbiased shape from said biased shape.

37.(Previously Presented) The tissue connector apparatus of claim 36 wherein said first coupling releasably couples said first end portion of said surgical clip to said first needle.

38.(Previously Presented) The tissue connector apparatus of claim 37 wherein said second coupling releasably couples said second end portion of said surgical clip to said second needle.

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39.(Previously Presented) The tissue connector assembly of claim 1 wherein each of said clips has a memory set loop configuration and a deformed configuration, and said bridge portion separates said loops from one another when said clips are in their memory set configuration.

40.(Previously Presented) The tissue connector assembly of claim 1 wherein each of said clips has a free end.

41.(Currently Amended) Tissue connector apparatus comprising an elongated member having a first loop shaped portion adapted to hold tissue therein, a second loop shaped portion adapted to hold tissue therein, and a bridge portion bridging said first and second loop shaped portions, each loop shaped portion having a free end and being deformable into a second deformed shape where it tends and self-tending to return from the second deformed shape towards its the loop shape.

42.(Previously Presented) The tissue connector apparatus of claim 41 wherein said elongated members are not coils.

43.(Previously Presented) The tissue connector apparatus of claim 41 wherein said elongated member is a wire.

44.(Previously Presented) The tissue connector apparatus of claim 43 wherein said wire comprises nitinol.

45.(Previously Presented) The tissue connector apparatus of claim 41 further including a pair of coils, one of said coils surrounding at least a portion of one of said first loop shaped portion and the other of said coils surrounding at least a portion of said second loop shaped portion.

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46.(Previously Presented) The tissue connector apparatus of claim 45 wherein each coil has an outer end and an inner end, and said elongated member has two enlarged end portions, further including a restraint coupled to said elongated member adjacent to each of said inner ends.

47.(Previously Presented) The tissue connector apparatus of claim 41 wherein said bridge portion is substantially straight.

48.(Previously Presented) Tissue connector apparatus comprising an elongated member having a first loop shaped portion, a second loop shaped portion and a bridge portion bridging said first and second loop shaped portions, each loop shaped portion having a piercing element at one end and a portion that merges into said bridge shaped portion, each loop shaped portion being deformable into a second deformed shape and having the property of tending to return towards its loop shape by moving upon itself.

49.(Previously Presented) The tissue connector apparatus of claim 48 wherein said elongated members are not coils.

50.(Previously Presented) The tissue connector apparatus of claim 49 wherein said elongated member is a wire.

51.(Previously Presented) The tissue connector apparatus of claim 50 wherein said wire comprises nitinol.

52.(Previously Presented) The tissue connector apparatus of claim 48 further including a pair of coils, one of said coils surrounding at least a portion of one of said first loop shaped portion and the other of said coils surrounding at least a portion of said second loop shaped portion.



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53.(Previously Presented) The tissue connector apparatus of claim 52 wherein each coil has an outer end and an inner end, and said elongated member has two enlarged end portions, further including a restraint coupled to said elongated member adjacent to each of said inner ends.

54.(Previously Presented) The tissue connector apparatus of claim 48 wherein said bridge portion is substantially straight.

55.(Currently Amended) Tissue connector apparatus comprising a surgical fastener comprising two clips and a bridge portion connecting said two clips, each clip having a piercing element at one end thereof; each clip further ~~having self-transitioning from~~ an open configuration and to a closed configuration, wherein each clip has a proximal end point and a distal end point and wherein the proximal end point is separated from the distal end point when said clip is in said open configuration and wherein the distance between said proximal end point and said distal end point is reduced when said clip is in said closed configuration.